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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,309	03/24/2004	Yutaka Taguchi	MAT-8527US	6516
23122	7590	07/19/2005	EXAMINER	
RATNERPRESTIA			TAKAOKA, DEAN O	
P O BOX 980			ART UNIT	
VALLEY FORGE, PA 19482-0980			PAPER NUMBER	
			2817	

DATE MAILED: 07/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/809,309	<b>Applicant(s)</b> TAGUCHI ET AL.	
	<b>Examiner</b> Dean O. Takaoka	<b>Art Unit</b> 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☒ Claim(s) 8-10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☒ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 3/24/04.
- 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1 and 3 are rejected under 35 U.S.C. 102(a) as being anticipated by Applicant's admitted prior art (AAPA).

Claim 1:

Figs. 7 and 9 of Applicant's admitted prior art (AAPA) shows a high-frequency switch comprising a circuit board comprising two input electrodes (111, 112) along a first side two output electrodes (113, 114) along a second side and four connection electrodes on a surface (from 111A to 111, et al.); and four PIN diodes (121-124) connected to the corresponding four connection electrodes; where each side of a quadrangle made by connecting the two input and two output electrodes is at an angle other than 180° to a corresponding side of a quadrangle made by connecting the four connection electrodes (Fig. 9 where each connection electrode is angle with respect to the two input and two output electrodes).

Claim 3:

Where the first side is opposite the second side (Fig. 9).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA.

Figs. 7 and 9 of Applicant's admitted prior art (AAPA) shows a high-frequency switch comprising a plurality of circuit boards (Fig. 7 and 9) but is silent where the circuit boards are dielectric materials.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to construct the circuit boards from a dielectric material. The circuit structure of AAPA comprises plural laminated substrates (Fig. 7 and Fig. 9), where the diodes (121-124) of a top substrate would be obviously be connected thru vias to corresponding transmission line connections (from 111A to 111, et al.) of a lower substrate. It therefore would have been obvious that the substrates material would comprise dielectric material (where the term dielectric is generic and where any non-metallic material would comprise a dielectric) since via connection would necessitate a substrate at least in part surrounding the via connection portion thereof of a dielectric material to prevent shorting of the via.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Goldsmith et al. (U.S. Patent No. 6,356,166).

Figs. 7 and 9 of Applicant's admitted prior art (AAPA) shows a high-frequency switch comprising a circuit board further comprising passive components such as resistors (151 – 154) but is silent where the resistors control the diodes.

Goldsmith et al. shows a similar switch also comprising diodes and resistors (303, 304, 308, 309) where the resistors control the diodes (col. 8, lines 37-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the switch circuit disclosed by AAPA with the controlling resistors disclosed by Goldsmith et al. Such a modification would have realized the advantageous benefit of providing magnitude control for the DC bias (col. 8, lines 37-39) as is well-known in the art thus suggesting the obviousness of the modification.

Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Nishijima et al. (U.S. Patent No. 6,313,700).

Figs. 7 and 9 of Applicant's admitted prior art (AAPA) shows a high-frequency switch comprising a plurality of circuit boards (Fig. 7 and 9) made of dielectric materials, discussed in the reasons for rejection of claim 4 above, but is silent where the circuit boards are ceramic dielectric materials (claim 5); or where the plurality of dielectric materials have different dielectric constants (claim 7).

Nishijima et al. teaches a similar high-frequency switching circuit comprising diodes and resistors and further comprising a plurality of circuit boards, the circuit

boards comprising ceramic dielectric materials and where the plurality of dielectric materials have different dielectric constants (col. 20, lines 1-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the substrate layers disclosed by AAPA with the ceramic dielectric materials and where the plurality of dielectric materials have different dielectric constants disclosed by Nishijima et al. Such a modification would have realized the advantageous benefit of providing a combination MMIC and HIC circuit; the HIC circuit including the passive switching circuit where the advantages and disadvantages of the combination circuit offset, such a heat dissipation, production yield, et al. (col. 21, lines 32-53; Nishijima et al.), thus suggesting the obviousness of the modification.

#### ***Allowable Subject Matter***

Claims 8 – 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Jain – shows a high-frequency switch.

Jou – shows a high-frequency switch.

Art Unit: 2817

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O. Takaoka whose telephone number is (571) 272-1772. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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July 14, 2005